

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 11-27, 32, and 41-62 are presently pending. In this response, claims 16-17, 41, 45 were amended, and new claims 48-62 added.

In the outstanding Office Action, Claims 11-27, 32, and 41-47 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,872,019 to Lee in view of U.S. Patent No. 5,655,940 to Hodson et al. and U.S. Patent No. 4,808,983 to Benjamin et al.; and Claims 11-27, 32, and 41-47 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lee in view of Hodson and Benjamin and further in view of U.S. Patent No. 6,326,221 to Lee.

Applicants respectfully traverse the rejection of Claims 11-27, 32, and 41-47 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lee in view of Hodson and Benjamin.

Lee discloses a method of fabricating a field emitter array (FEA) incorporated with MOSFETs. It merely discloses fabrication of the FEA on a single substrate together with MOSFETs to drive the FEA. As acknowledged by the Office Action, Lee fails to teach or suggest the following features as recited in claim 15:

“the emitter being arranged into more than one demarcated, independently addressable region of emitters; and

“providing address circuitry operably coupled with the field emitters and configured to independently address individual regions of the emitters,

wherein the arrangement of emitters defines a plurality of rows and columns within each region, and the providing of the address circuitry comprises providing at least two row drivers for addressing rows in different regions of the emitters."

While acknowledging the above noted deficiencies of Lee, the Office Action refers to Hodson and Benjamin to supply Lee's deficiencies. Although the Office Action correctly notes Hodson as disclosing creation of a large field emission display device by arranging a plurality of emitter plates on a substrate, the emitter plates being independently addressable, applying the teachings of Hodson to Lee nevertheless fails to teach or suggest all the requirements of claim 15.

As shown in Hodson's Figure 2 and acknowledged in Section 3 of the Office Action, Hodson discloses a method of fabricating a large field emission display by mounting a plurality of emitter plates on a substrate, and each emitter plate is controlled by distinct row and column drivers. Also see Hodson's col. 4, lines 5-15. The Office Action asserts that this teaching of Hodson when combined with Lee would result in claim 15 of the present invention.

As noted above, Lee discloses fabrication of the FEA on a single substrate together with MOSFETs to drive the FEA. Since Lee's method forms field emitters in a single substrate, one would have to modify Lee in order to accommodate the teachings of Hodson, i.e., to use multiple emitter plates in order to create a larger display. Since Lee fails to teach using multiple emitter plates or tiling of the emitter plates in order to create a larger display, the question of applying Hodson's independent addressing of the emitter plates does not even arise.

Even assuming for argument sake that one attempts to apply Hodson's independent addressing of emitter plates to the teachings of Lee, one skilled in the art would not be able to attempt such an exercise as Lee merely teaches fabricating field emitter arrays incorporated with MOSFETs and does not even remotely suggest arranging the emitters into regions. In the absence of such a teaching in Lee, even if the teachings of Hodson are combined with Lee, the combination still fails to teach or suggest all the elements of claim 15 of the present invention.

Therefore, in order to arrive at the claimed invention, one would have to modify the teachings of Lee to arrange the plurality of emitters into more than one demarcated, independently addressable region of emitters as recited in claim 15 and then subsequently use the teachings of Hodson to the modifications made to Lee. This is reverse engineering in hindsight – which is impermissible and so held by the courts as well as the Board of Appeals in numerous cases.

Furthermore, modification of Lee to accommodate the teachings of Hodson **destroys** Lee's intended function. Lee intends to manufacture two devices -field emitter arrays and MOSFETs to drive the FEA – in a single fabrication process in order to reduce manufacturing cost of the field emitter display. See Lee's col. 7, lines 45-50. If Hodson's independent addressing of emitter plates scheme is applied to Lee, then Lee's addressing scheme as shown in Figure 7 needs to be modified as well – which clearly is a **teaching away** from what Lee intends to achieve. For example, Lee's Figure 7 shows a single drive circuit connecting the rows and another single drive circuit connecting the columns. If independent

addressable drivers are used for various field emitters, then such a modification would no doubt increase the manufacturing cost of the device – which clearly is not in line with Lee's intended purpose (reduce manufacturing cost).

Benjamin discloses a flat panel display and a process for making the same. Benjamin at col. 8, lines 10-22 merely discloses that a number of encoders may be used in parallel and that it is desirable to drive a display from both sides. These teachings of Benjamin fail to supply the deficiencies of Lee or Hodson.

At least for the above noted reasons, neither Lee nor Hodson or Benjamin, either alone or in combination, teach or suggest all the elements of claim 15. Accordingly, claim 15 and its dependent claims are in condition for allowance.

The combination of Lee, Hodson and Benjamin also fails to teach all the limitations of originally filed claim 16. However, claim 16 has been amended to more clearly define the features recited therein. Amended claim 16 recites, among other features, "...wherein demarcation of individual regions of the emitters is achieved by forming address lines that are effectively contained within the individual respective regions of the emitters."

In addition to the distinctions described above, since Lee further fails to arrange field emitters into more than one demarcated, independently addressable region of emitters, the subsequent step of informing how the demarcation is achieved (by forming address lines that are effectively contained within the

individual respective regions of the emitters) does not arise. Further, neither Hodson nor Benjamin or Lee, teach or suggest the newly recited feature as in claim 16. Accordingly, claim 16 is also in condition for allowance.

Since the combination of Lee, Hodson, and Benjamin fail to teach or suggest all the limitations of claim 17, and further in view of distinctions as noted above, claim 17 is also in condition for allowance.

Neither Lee, nor Hodson, or Benjamin, either taken independently or in combination, teach or suggest the limitations of claim 18, including providing row and column address lines operably coupled with the matrix and collectively configured to address the field emitters, at least one of the row or column address lines having a length within the matrix which is sufficient to address less than all of the field emitters which lie in the direction along which the at least one row or column address line extends within the matrix. Claim 18 and its dependent claims are therefore in condition for allowance.

Claim 24 recites a method of forming a field emission display (FED) device comprising, *inter-alia*, providing a substrate configurable into a base plate...; forming a plurality of discrete, segmented regions of field emitter tips by removing at least portions of the substrate; individual discrete, segmented regions being electrically isolated into separately-addressable regions of field emitter tips.... Neither Lee nor Hodson or Benjamin teach or suggest the above recited

limitations. Claim 24 is allowable for at least this reason. Accordingly, claim 24 and its dependent claims are in condition for allowance.

Claim 32 recites, among other things, providing a monolithic addressable matrix of rows and columns of field emitters, the matrix having a perimetral edge defining length and width dimensions of the matrix, partitioning the matrix into a plurality of discretely-addressable sub-matrices of field emitters, providing row and column address lines operably coupled with the matrix and collectively configured to address the field emitters, at least one of the row or column address lines having a length within the matrix which is sufficient to address less than all of the field emitters which lie in the direction along which the at least one row or column address line extends within the matrix.

While acknowledging that Lee fails to teach or suggest the above recited features of claim 32, the Office Action relies on Hodson and Benjamin to supply Lee's deficiencies. Modifying Lee according to Hodson or Benjamin to allegedly obviate the claim element "partitioning the matrix into a plurality of discretely-addressable sub-matrices of field emitters" is improper, and would destroy Lee's intended purpose.

The Office Action further asserts that Benjamin at col. 8, lines 10-22 teaches "that a monolithic plate 3 having an array of pixel electrodes p thereon and plural driving circuit chips 9 requires subdividing the matrix into sub-matrices such that the row and column lines are no more than 15 cm long." Applicants respectfully disagree.

Benjamin's col. 8, lines 10-22 disclose "there is no need to have just one encoder for the whole display; instead a number of encoders EE may be used in parallel, for example one to each line. Using lines 15 cm long and 150 chips per line, the pixel can be updated 25 times per second..." It is not clear how this disclosure of Benjamin is being read on the below noted recitation of claim 32:

providing row and column address lines operably coupled with the matrix and collectively configured to address the field emitters, at least one of the row or column address lines having a length within the matrix which is sufficient to address less than all of the field emitters which lie in the direction along which the at least one row or column address line extends within the matrix...

Benjamin fails to teach or suggest "at least one of the row or column address lines has a length within the matrix which is sufficient to address less than all of the field emitters which lie in the direction along which the at least one row or column address line extends within the matrix" as recited in claim 32.

At least for the above stated reasons, neither Lee nor Hodson or Benjamin teach or suggest all the elements of claim 32. Accordingly, claim 32 and its dependent claims are now in condition for allowance.

Applicants arguments made with respect to claims 15 and 32 are equally applicable to claims 41 and 45. Accordingly, claims 41 and 45 and their respective dependent claims are also allowable.

Claims 11-27, 32, and 41-47 were also rejected under 35 U.S.C. §103(a) as being unpatentable over Lee in view of Hodson and Benjamin and further in view of Lee '221. Applicants' arguments made as above using Lee and Hodson

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and Benjamin are also equally applicable here. Lee '221 fails to supply the deficiencies of Lee or Hodson or Benjamin. Accordingly, claims 11-27, 32, and 41-47 are in condition for allowance.

Support for new claims 48-62 may be found at least on page 9, lines 14-18, page 10, and Figure 2 of the present specification.

While it is believed that the instant amendment places the application in condition for allowance, should the Examiner have any further comments or suggestions, it is requested that the Examiner contact the undersigned at 509-624-4276.

Respectfully submitted,

Dated: \_\_\_\_\_

March 27, 2003

By: \_\_\_\_\_



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